



Amazon Malaria Initiative (AMI)

Communication Strategy for Malaria in Suriname

2014 - 2016

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Links Media, LLC developed this communication strategy with input from Suriname's Bureau of Public Health (BOG) and the Pan American Health Organization (PAHO/WHO). It is intended to serve as a reference document and does not necessarily represent policies or programs currently being carried out by the government of Suriname.

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Acronyms and Abbreviations

| | |
|---------|---|
| ACT | Artemisinin-based combination therapy |
| AMI | Amazon Malaria Initiative |
| CDC | United States Centers for Disease Control and Prevention |
| GFATM | Global Fund to Fight AIDS, Tuberculosis and Malaria |
| IEC | Information, education and communication |
| IPC | Interpersonal communication |
| KAP | Knowledge, attitudes and practices |
| LLIN | Long-lasting insecticidal bed nets |
| MSD | Malaria Service Deliverers |
| NMCP | National Malaria Control Program |
| NGO | Non-governmental organization |
| PAHO | Pan American Health Organization |
| PMI | President's Malaria Initiative |
| PQM | Promoting the Quality of Medicines Program |
| RAVREDA | Amazon Network for the Surveillance of Antimalarial Drug Resistance |
| RBM | Roll Back Malaria Partnership |
| RDT | Rapid diagnostic test |
| SIAPS | Systems for Improved Access to Pharmaceuticals and Services Program |
| USP | United States Pharmacopeial Convention |
| USAID | United States Agency for International Development |
| WHO | World Health Organization |

About the Amazon Malaria Initiative (AMI)

The Amazon Malaria Initiative (AMI) is a project funded by the United States Agency for International Development (USAID) that was created in 2001 to improve malaria prevention and control in countries of the Amazon basin, and was expanded to include select countries in Central America in 2008.* The key partners responsible for implementing AMI activities are the Ministries of Health of 11 participating countries, including the Guiana Shield countries of Brazil, Guyana, and Suriname, along with French Guiana (France) as an observer. Countries are assisted by five international technical partners: the Pan American Health Organization (PAHO/WHO), the U.S. Centers for Disease Control and Prevention (CDC), the Systems for Improved Access to Pharmaceuticals and Services Program (SIAPS) implemented by Management Sciences for Health (MSH), the Promoting the Quality of Medicines Program (PQM) implemented by the U.S. Pharmacopeial Convention (USP), and a communication component implemented by Links Media. AMI uses a multi-pronged approach that entails expanding access to diagnosis and treatment, ensuring medicine quality and availability, managing vector populations, conducting drug resistance surveillance, promoting individual preventive measures, and engaging with stakeholders to support the adoption and sustainment of effective interventions.

Website URL:

<http://www.usaidami.org/>

About the Amazon Network for the Surveillance of Antimalarial Drug Resistance (RAVREDA)

The Amazon Network for the Surveillance of Antimalarial Drug Resistance (RAVREDA) is a network that was organized by PAHO and several PAHO member states including Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname, and Venezuela, to address antimalarial drug resistance in the Amazon basin. Like AMI, RAVREDA has expanded to include other member states in Central America and the Caribbean. RAVREDA partners with international institutions and local organizations in participating countries in order to achieve its goals.

Website URL:

http://www.paho.org/hq/index.php?option=com_content&view=category&layout=blog&id=1988&Itemid=2150&lang=en/.

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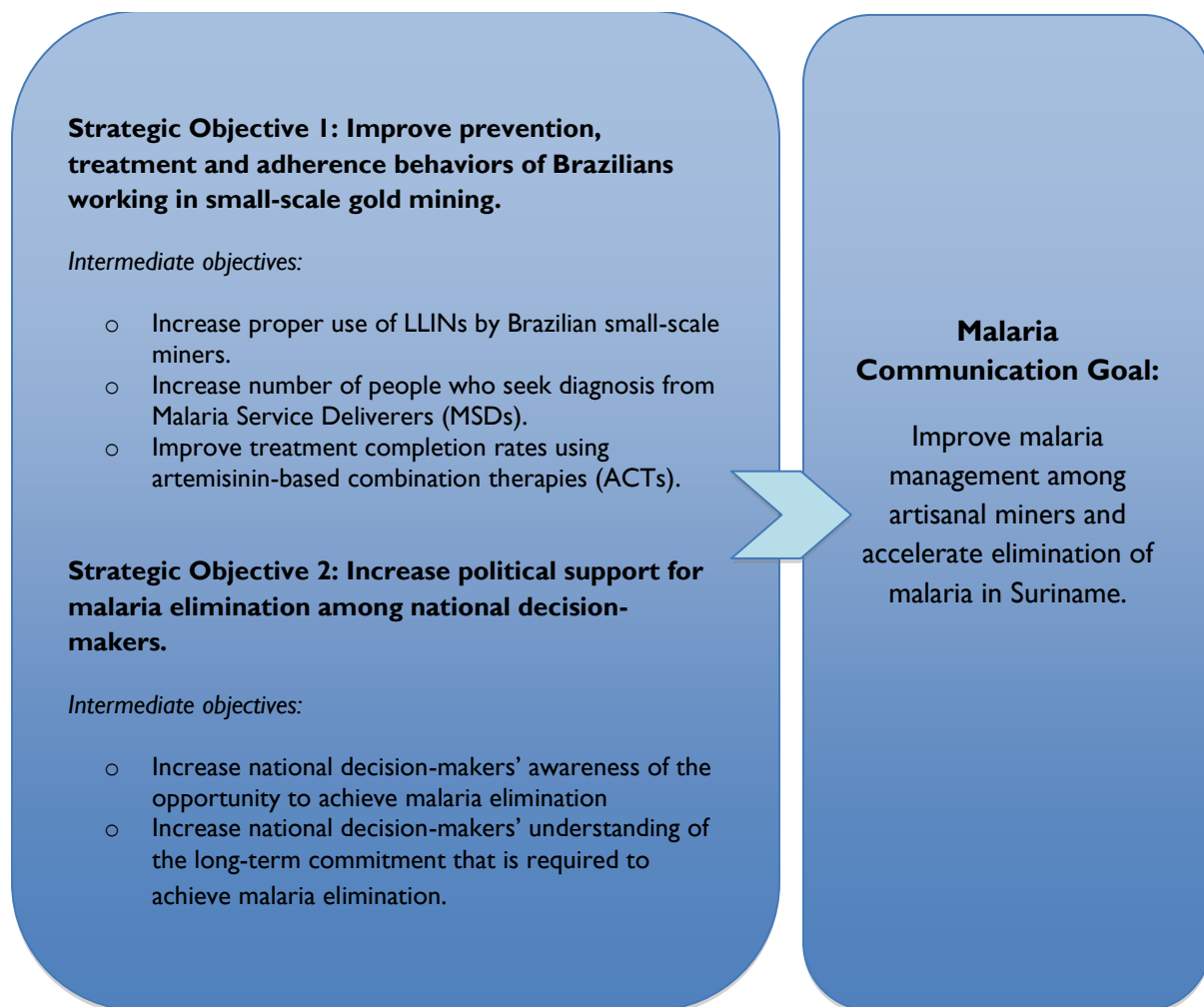
1. Introduction

The purpose of this communication strategy is to support the reduction of malaria transmission in Suriname by promoting social and behavior change. The activities recommended within this strategy seek to complement and strengthen the adequate implementation of malaria interventions by using communication to influence the ways in which populations in mining areas use products and services. In addition, activities are recommended at the central level in order to maintain malaria on the public health agenda. The intended implementers of this communication strategy include the Ministry of Health, the Infectious Diseases Board in its role as the Country Coordinating Mechanism for the Global Fund to fight AIDS, TB, and Malaria (GFATM) grant, health professionals, Malaria Service Deliverers (MSDs), and other communication professionals contributing to malaria elimination in Suriname.

2. Communication Goal

This communication strategy aims to support malaria management among artisanal gold miners in areas on Suriname's borders with French Guiana (France) and Brazil, as well as to accelerate elimination of malaria.

Figure 1 Strategic Objectives and Communication Goal



3. Communication Objectives

Communication interventions aim to increase the frequency of desired behaviors around proper malaria prevention, diagnosis, and treatment for Brazilian gold miners. Recommended interventions seek to improve awareness, influence attitudes, and limit harmful practices. Malaria communication with a variety of audiences will serve broader strategies for malaria elimination and prevention of artemisinin resistance in Suriname.

Prevention

Communication will be used to promote the adoption of personal protective measures, with a focus on increasing the proper use of long-lasting insecticidal bed nets (LLINs) for malaria prevention.

Diagnosis

Communication will be used to increase the number of people who seek diagnosis from Malaria Service Deliverers (MSDs). In many cases, diagnosis will be done with rapid diagnostic tests (RDT) that are appropriate for detecting the locally occurring strains.

Zelfkennis is goud waard.

O auto-conhecimento vale ouro.

(Self-knowledge is worth gold.)

- Surinamese saying

Treatment

Interventions will have the objective of increasing miners' demand for quality-assured antimalarial treatment from the formal public health system, namely artemisinin based combination therapy (ACT). In addition, a component of the strategy seeks to improve miners' treatment completion rates with antimalarial medicines. The expected result of this behavioral objective is twofold: it will contribute to decreasing transmissibility, as well as preventing the emergence of resistance to artemisinin.

Elimination

At the central level, this strategy seeks to increase national decision-makers' awareness of the opportunity to achieve malaria elimination and of the long-term benefits of elimination. The goal is to improve decision-makers understanding of the investment needed to implement technical interventions for elimination. The expected result is that funding for malaria elimination will be sustained through the year 2020, or as long as is necessary to achieve the agreed-upon targets.

Desired Audience Behaviors

Miners

- A. *Prevention:* Miners use bed nets (LLINs).
- B. *Diagnosis:* Miners seek diagnosis from an MSD.
- C. *Treatment:* Complete treatment with ACTs.

National decision-makers

- A. *Elimination:* Decision-makers demonstrate their commitment to malaria elimination by supporting effective policies and budgets.

4. Background

Major strides have been made against malaria in since the year 2000. From 2000-2013, Suriname's malaria incidence declined by 95.7%.¹ Malaria is now largely under control in interior villages of Suriname, but gold mining areas still experience significant rates of malaria transmission. During the 2000s, the Government of Suriname has used support from multiple external grants to develop comprehensive malaria program activities including free testing and treatment of malaria using ACTs, information and awareness campaigns, and distribution of long-lasting insecticidal nets (LLINs). As of 2013, only 729 total confirmed cases were reported. The Government of Suriname has dramatically increased its annual budget for efforts against malaria to USD \$1.5 million (Ibid.).

Today, the following national institutions and actors are involved in malaria activities in Suriname:

- **Bureau of Public Health (BOG)** within the Ministry of Health (MOH) is responsible for malaria control.
- The **Infectious Diseases Board** is a national technical advisory group (TAG) originally formed as the Malaria Board in 1995, which is chaired by the MOH's Director of Health. It includes a representative of the BOG, civil society actors such as a representative of the Medical Mission, malariologists, medical specialists, technicians, and health workers. At different points in its history it has also included the ministries of regional affairs and defense. The Infectious Diseases Board keeps track of malaria incidence in Suriname, monitors the implementation of national malaria control efforts, and guides the policy making process, such as changing treatment protocols if necessary.
- **Medical Mission (MZ)** malaria program clinics assumed responsibility for primary health care in the interior in 2002; they have carried out *bolletjes* (literally: "globules" or mass blood screening). However, they are only present in stable communities.
- **Malaria Service Deliverers (MSDs)** are permanent health agents in remote areas; these are people who own shops, or work in professions such as cooks and cleaners, who are trained to conduct diagnosis and dispense medicines for malaria. At present, shop owners are being trained to conduct diagnosis as MSDs; the MOH has provided financial incentives to shop owners so that they do not sell antimalarial drugs when people come and buy things in the shops, but instead talk with customers about malaria.

Elimination as a Long-Term Goal

In 2014, Suriname declared that it would move towards elimination of malaria. Certification of malaria-free municipalities will begin in 2015. Along with Ecuador, Suriname is one of the only countries in the Amazon basin where elimination seems feasible. MZ clinics have made a major contribution to reaching this point.

In order to achieve elimination, however, the existing malaria drugs must remain efficacious. Resistance makes it more difficult to treat individuals infected with malaria parasites and places a heavier burden on health systems. Thus, the avoidance of resistance to ACTs is inextricably linked to the success of elimination. Artemisinin efficacy declined slightly in Suriname between 2004 and 2014. While ACTs remain effective, Suriname faces a significant threat of emergence of resistance to artemisinin and its partner drugs due to their inappropriate use, particularly among hard to-reach and mobile populations involved in gold mining in Guiana Shield countries. If ACTs lose their efficacy at some time in the future, it is possible that untreatable malaria could emerge in Suriname and elimination would no longer be possible. The optimal solution is to eliminate malaria from the national territory before treatment failures begin to emerge; however, this will be very challenging.

Focus on Mining Areas on Border with French Guiana

Currently, almost 98% of Suriname's malaria cases come from the border area with French Guiana where a predominantly Brazilian workforce is engaged in artisanal gold mining.² As such, the border has become the most important area of disease in Suriname. Malaria transmission occurs almost exclusively in mining "hotspots," where the population is highly mobile and MZ clinics are not present. Thus, miners do not have access to MZ services. Instead, local projects have used largely volunteer Malaria Service Deliverers (MSDs) who have been trained to provide diagnosis, treatment and follow-up; however, MSDs' presence is not well known. In French Guiana itself -- which does not receive USAID assistance through AMI -- miners are able to access formal health services in fixed locations. Nevertheless, plans to extend these formal services are limited for practical and socio-behavioral reasons (i.e. highly dispersed population, high travel costs, miners distrust French soldiers, etc.). Figure 3 on the next page shows the routes of key population movements for the purpose of artisanal gold mining in French Guiana, with Surinamese and Brazilian border villages included.

Figure 1: Area of study of malaria knowledge, attitudes, and practices

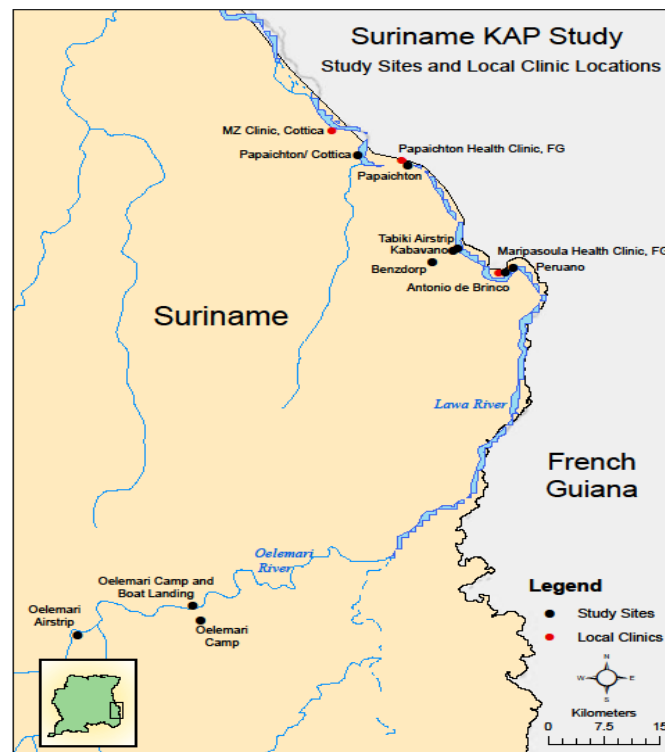
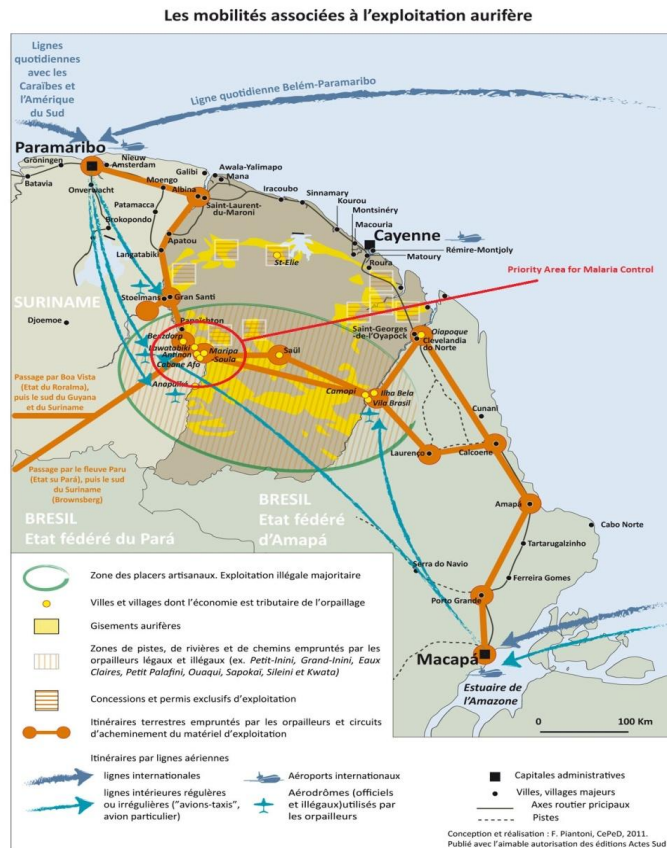


Figure 2: Map of population movements around gold mining in French Guiana and priority area for malaria control



Credit: Guyamapa.org 2014

Artisanal mining in Suriname's interior along the border with French Guiana is characterized as being highly disorganized. "Mining enterprises" do not exist in a formal sense. This poses a challenge because of the lack of private industry partners for malaria control efforts. However, artisanal mining operations do follow a pattern: an investor puts up his or her own money to fund the operation. For this, the owner is entitled to 50% of the gold that is found. Thirty percent of the gold is divided among approximately six workers. Another 12% goes to the caretaker or concession holder of the land on which the gold was found, and so on.³

Faith communities have infrastructure established in stable communities (villages), and do not extend to mining camps in the formal sense. However, existing assets to consider are the "lay brothers" who spend time in temporary settlements deep in the interior and who are linked to churches in the towns. Leaders of faith communities also mine for gold to support themselves. Thus, the Christian church has some presence in both stable communities and mining camps.

5. Guiding Principles

According to the findings from the above-referenced KAP study conducted in 2013, **geographic influences are more powerful than individual beliefs** in determining use of health facilities and proper treatment in Suriname's artisanal mining areas.⁴ The data suggests that the financial cost as well as the opportunity cost in terms of time spent away from mining activities were the main barriers to use of health facilities, and both of these barriers are related to geography. One reason cited for reliance on

self-medication was reluctance to leave gold mining areas. Advanced purchasing of unregulated antimalarials has been attributed to the rational assessment of risk of malaria transmission in areas where the public health system does not have a presence (Ibid). In addition, regulated antimalarials are not made available without a diagnosis.

Communication alone is not enough. Communication must accompany other interventions that provide the itinerant mining population with the tools for behavior change. A general consensus exists that the long-term goal should be to provide universal access to high-quality health services for remote and mobile populations in the formal sector; however, expanding access takes time and may not be feasible in all situations. In order to address gaps in service delivery the interim, a new Global Fund project will help to strengthen and expand the existing network of MSDs to reach remote itinerant miners. Approaches have been planned to complement fixed and mobile service delivery from 2015-2017 in a way that decreases miners' need to rely on presumptive treatment with substandard antimalarial medicines. Diagnosis and treatment posts will be set up and staffed by paid MSDs at medium and large mining sites. The first step will be to train paid MSDs to administer RDTs and ACTs. Three main commodities will be required: (i) rapid diagnostic tests (RDTs); (ii) long-lasting insecticidal bed nets (LLINs); and (iii) ACTs.

An additional, novel approach will be for MSDs to distribute RDTs, ACTs, and bed nets directly to miners at key transit points upon request. This will occur as a later phase of the malaria intervention in mining areas.

Other general health communication principles that were considered in the development of this strategy are that **information sources must be viewed as credible**, and that **emotions and attitudes matter as much as facts in shaping behavior**.

6. Social and Behavior Change Communication

Communication interventions to improve awareness, influence attitudes, and change behaviors will focus on targeting key populations through existing or novel channels. Approaches will be coupled with planned improvements in service delivery, and messages will focus on prevention, diagnosis, and treatment.

Behavior Change Priorities

Priorities have been broken down by audience and desired behavior in order to distill the communication objectives into key messages. The desired behaviors under these objectives can be sorted into four categories of action: prevention, diagnosis, treatment, and elimination. The desired behaviors at the level of individual miners are routine and proper bed net use, increased uptake of malaria diagnosis, and improved compliance with antimalarial treatment. The desired behavior at the level of policymakers who impact the enabling environment for malaria elimination is to supporting policies and budgets that are conducive to achieving the long-term goal of disease elimination.

The desired outcomes to be achieved through communication activities include the normalization of LLIN use, more appropriate use of antimalarial medicines, and sustained political support for efforts against malaria.

7. Audiences

Gold miners are the primary target for behavior change, but all populations living or working in the resistance containment areas need to be reached with key malaria prevention, diagnosis, treatment, and elimination messages in accordance with the regional strategy (see Box 2). Additional audiences such as

national decision-makers are important to reach in order to improve the enabling environment for malaria control and ensure that improvements can be sustained.

Box 2. Audience Segmentation

| Audiences | Description/Rationale | Specific Targets |
|------------------|--|--|
| Primary | The main individuals around whom the strategic communication objectives are focused based on evidence and where behavior change should take place. | 1) Gold miners (especially Brazilian nationals) Migrant workers and other extractive industry workers ATV drivers |
| Secondary | Individuals that have frequent interactions with the primary audience and may have a positive and/or negative influence on behavior change. This audience must be factored within the communication objectives for effective behavior change of the primary audience. | 1) Accompanying spouses, transactional sex workers, cooks 2) Malaria Service Deliverers (MSDs) 3) Faith communities 4) Stable populations (including but not limited to Amerindian & Maroon communities) 5) Shop owners, informal pharmacies |
| Tertiary | Groups, institutions or individuals who may either support or inhibit behavior and social change in a community or area, by allowing or disallowing an intervention to take place. These people control the local social environment, communication channels and decision-making processes and have a great influence on local social norms. | 1) National leaders (e.g. President, Minister of Finance), politicians 2) Local leaders 3) Infectious Diseases Board |

Per the box above, the primary focus is on young, single males involved in gold mining activities.⁵ Brazilian nationals are the majority of miners and often lack legal status while working in other Guiana Shield countries.⁶ There is a need to reach Brazilian nationals, other migrant workers, as well as local populations. Governments of Guiana Shield countries have documented that indigenous peoples are disproportionately affected by malaria (although these populations are not uniformly fixed in a single location given indigenous males' participation in migration patterns around mining and logging work).

Secondary audiences include related sub-populations of accompanying spouses, transactional sex workers and cooks who are disproportionately female. Informal private sector pharmacies,

private mining enterprises, shop and pharmacy owners are other secondary audiences that have frequent interactions with the primary audience and may have an influence on their behaviors.

In the search for allies who can work with MSDs to help deliver campaign messages about malaria prevention, diagnosis, treatment, and elimination, faith communities such as those associated with Christian missions in the mining areas, as well as national-level decision-makers, should also be approached as potential enablers. National leaders such as ministers of health, finance, and natural resources are key tertiary audiences. In addition, local leaders such as village chiefs and other political officials in nearby communities may use their roles to either support or inhibit interventions for social and behavior change in mining areas.

8. Key Messages

The messages that correspond to the areas of prevention, diagnosis, treatment, and elimination are broken down by target audience below. Messages assume good knowledge of modes of transmission and type of treatment as documented in the 2013 KAP study. Messages are as detailed as possible regarding the “how,” “when,” and “why” of desired actions. This is because they are designed to convince audiences as to why the desired behavior is better than their current behavior (advantages of adoption) and explain what the risks involved in not adopting the behavior.

The messages to **mobile miners and related populations** and **stable populations** are:

- Always sleep under a net to protect yourself against malaria.
- See a Malaria Service Deliverer (MSD) to obtain diagnosis and treatment for malaria.
 - Supporting points:*
 - It is important to get tested if you think you have malaria, because the type of malaria determines which medicine you must take.
 - There is an MSD in every village.
 - Malaria tests and medicines are free.
- Finish your malaria treatment!
 - Supporting points:*
 - If you finish your ACTs, you will be cured.
 - Malaria may come back if you do not finish the treatment.
 - Treatment may not work in the future if you do not complete your ACTs.

The messages to **decision-makers** are:

- Malaria elimination is possible in Suriname, but it will not be easy.
- The fight against malaria is like paddling a boat upstream; the moment you take a pause from paddling, you will go back.
- Going from few malaria cases to zero cases requires additional financial and political support for stronger surveillance systems.

- Ongoing operational research, as well as medicine quality and efficacy testing, are needed to ensure that the chosen interventions are as effective as possible. This protects the public investment in malaria control.
- Malaria parasites in Suriname are gradually becoming less sensitive to artemisinin, one of the main drugs used to treat malaria. With continued malaria transmission, there is a high risk that parasites will develop further resistance to this drug. Decisive action now can help to avert a public health disaster and avoid the high costs of untreatable malaria. Investing in malaria elimination can help to preserve the efficacy of artemisinin.
- Elimination requires a long-term commitment to prevent re-establishment of malaria in the future.

These messages should be pre-tested in the field with primary, secondary, and tertiary audiences prior to deployment of any collateral materials.

9. Channels

Consistent messaging via a variety of channels has a greater potential to reach the target populations and be internalized than does the use of a single channel alone. Studies have documented strong a relationship between exposure to messages about malaria diagnosis and treatment, and treatment-seeking behavior. Together, **interpersonal communication (IPC)** and **visual media** can provide a powerful means of conveying malaria control messages to miners by creating a “surround sound” effect.

Peer groups and **Information, Education and Communication (IEC) materials** were found to be the two most common sources of health messages across rural regions of Guiana Shield countries. Per a KAP study conducted in neighboring Guyana in 2005, 42.5% of miners surveyed chose **oral communication** as the preferred means of providing malaria information as compared to **posters** placed in health centers and shops (25.1%) and **electronic media such as TV, videos, DVDs** (13%), reinforcing the need to engage via interpersonal channels. Radio penetration is significantly higher than TV in remote regions of Suriname. Brazilian miners may have access to TV, however, and when they do they watch the *Globo* network almost exclusively because it is in Portuguese. DVD players are common and present an opportunity to present songs or video clips about malaria on-demand. **Mobile (cell phone)** penetration, which considers the total number of pre-paid and post-paid subscriptions, has been estimated at 136% in Suriname^{7,8,9}. Coverage is good, even in the interior. In the mining areas, approximately 90% of communication is done via cell phone.¹⁰ At the same time, social networking sites like Facebook have garnered a steadily increasing number of users. Because most artisanal miners are Brazilian males, it is relevant to note that half of the Brazilian population uses the Internet and 89 million Brazilians use Facebook on a monthly basis, which equals about 44% penetration within the population.¹¹ As of the year 2012, Suriname had 99,820 Facebook users, or 18.7% penetration.¹² Social media channels should be reviewed for future inclusion as they begin to attract a critical mass of the population.

10. Recommended Interventions

Communication activities will position, promote, and complement the recommended interventions that are to be carried out with at-risk populations by local MSDs under the new GFATM grant. MSDs and other local health service staff will be the main actors responsible for executing this activity with support from PAHO/WHO and targeted technical assistance from USAID.

Problem 1: Gold miners purchase ACTs in advance of travel to remote work sites. They self-diagnose and self-treat if they experience malaria symptoms while at mining sites. Those who self-diagnose and self-treat are much less likely to complete the full treatment as compared to individuals who obtain diagnosis from the formal health system.

Solution 1: Interpersonal Communication (IPC) will help to change miners' use of antimalarials. IPC has been documented as one of the preferred ways for miners to obtain health information. Miners and related populations who have contact with MSDs are much more likely to obtain the correct information about diagnosis, treatment, and treatment completion. MSDs will be trained to deliver campaign messages to miners; however, passive interactions are not enough. MSDs must conduct proactive outreach as well. Culturally-specific events and celebrations such as rodeos, carnival, Emancipation Day (Keti Koti on July 1), Brazilian Independence Day (September 7), Christmas (December 25), and Bible meetings will be used as opportune times to engage with a critical mass of people. These events are also important because they often precede outbreaks; thus, it will be wise to disseminate prevention, diagnosis, and treatment messages at such times.

When they are not providing services, MSDs will target influential community members such as mine owners, faith-based leaders, sex workers, cooks, shop owners, and minibus drivers or ATV drivers with oral communication. They will deliver messages that help to raise awareness of free diagnosis and treatment services and help promote bed net use.

MSDs will ask influential community members to initiate a dialogue about malaria within their social networks. Suriname's BOG should work with MSDs to help monitor and assess the effectiveness of their community outreach according to evolving needs.

Koni moro tranga.

Slimheid gaat boven kracht.

Mais vale astúcia que força.

(Cleverness beats strength.)

- Surinamese saying

Actions:

- MSDs use IPC to raise awareness among influential community members about the availability of free malaria diagnosis and treatment.
- MSDs use IPC to encourage bed net use.
- MSDs use IPC to explain value of diagnosis to miners.
- MSDs instruct miners to complete treatment in the correct doses.

- MOH/BOG creates and staffs a national telephone hotline that miners and others can call to locate the nearest MSD for malaria services.

Problem 2: Gold miners are often unaware of the presence of MSDs in the interior. They pay for ACTs, even though ACTs are available for free from MSDs.

Solution 2: Advertising and Information, Education and Communication (IEC) will help to change miners' use of antimalarials. The key communication products will be radio spots, cell phone minute reload cards, and malaria-themed music in the popular *forró* style. Radio spots will be disseminated by the MOH/BOG, and cell phone minute reload cards will be distributed to shop owners in the private sector. These products will be developed using established communication methods and principles, based on a strategic communication cycle that uses an assessment of the evidence base, testing, and monitoring during execution.

Actions:

- MOH/BOG create a standard uniform or badge for MSDs so that they become easily identifiable. Incorporate this uniform or badge into advertising and IEC materials.
- MOH/BOG adapt messages for use on cell phone recharge cards to raise awareness about the availability of free diagnosis and treatment from MSDs.
- Local health workers launch an awareness campaign about MSDs' provision of free malaria diagnosis and treatment.
 - Airing of radio spots
 - Advertising of hotlines printed on cell phone recharge/reload cards

Problem 3: As of 2013, only 29.4% of miners completed treatment with ACTs. They often saved pills for future bouts of illness. These behaviors may have contributed to a decline in *P. falciparum* malaria's sensitivity to one of the main components of ACTs between 2004 and 2014. Low treatment completion rates could cause artemisinin resistance to develop.

Solution 3:

The use of mobile health (mHealth) has experienced extensive growth and, when used appropriately, can reduce healthcare costs and improve patient outcomes. As previously noted, mobile phone subscriptions in Guiana Shield countries are very high, which can allow health authorities to target phone users with key information and messages via Short Message Service (SMS) or through smartphone applications created with specialized mobile content. If used appropriately, mHealth can become a tool to extend the reach of MSDs for the purpose of malaria communication and education.

In response to the growing mobile phone connectivity in the region and the increase in smartphone ownership, Suriname could offer a subscription service to provide individuals with key information and messages via text message. They could also consider producing and launching a downloadable mobile app that may be activated with or without cellular service in remote areas. Once activated, this compliance app would send text message reminders to take antimalarial medicine. This will be a simple and portable tool to extend health education and

communication activities and promote compliance with full antimalarial treatment where directly observed therapy is not possible. Information about this app should be provided by MSDs and private shop owners.

Actions:

- Establish a public-private partnership between public health services and mobile phone companies (e.g. Digicel), for the MOH/BOG to develop a subscription service that miners and related populations can use to receive key messages and information via their cell phones.
- MOH/BOG create a mobile messaging service that sends simple compliance cues to miners via text message. MSDs will activate the messaging service after diagnosing individual patients, in order to remind them to complete their malaria treatment with ACTs in the correct doses.
- MOH/BOG adapt malaria messages to raise awareness about the importance of completing antimalarial treatment for use on cell phone recharge cards.

Problem 4: The risk of losing momentum in the final stages of malaria elimination is high, especially in a context of a chronically underfunded health budget. Low malaria incidence may lead to insufficient investment which then might lead to the neglect of malaria as a public health issue. Meanwhile, meeting malaria prevention and elimination targets will require constant surveillance to ensure that malaria does not re-emerge in areas that have been declared free of the disease, and to identify whether resistance is occurring in a constantly evolving epidemiological context.

Solution 4: Elimination of malaria in Suriname requires national advocacy for improved epidemiological surveillance and a continued domestic funding commitment from authorities in Paramaribo. The Infectious Diseases Board is the key institution that should be involved in advocacy and stakeholder engagement at the national level.

Besides health, other sectors need to be involved in malaria elimination as well. Because of the irregular and unlawful nature of mining activities, the elimination agenda in Suriname does not have natural industry partners; however, assistance from the telecommunications industry and other sectors such as law enforcement may be helpful.

Lastly, elimination will also require close coordination with the governments of Brazil, French Guiana (France), and Guyana through the Foreign Ministry. For all of the above reasons, it is essential for the Infectious Diseases Board to exercise its power as the main body that advocates for malaria elimination with Suriname's decision-makers and the general public in the capital.

Actions:

- Infectious Diseases Board members present the facts about malaria in Suriname at national and international meetings.

- Infectious Diseases Board hosts roundtable discussions on World Malaria Day (April 25) and Malaria Day in the Americas (November 6) with civil society to attract the attention of the national media and decision-makers to elimination efforts.
- Infectious Diseases Board members write opinion editorials and letters to national decision-makers to argue for the resources that are needed to reach elimination targets (e.g. laboratory equipment to conduct therapeutic efficacy studies).
- MOH/BOG officials take advantage of high-level international summits to coordinate with diplomatic and technical representatives from neighboring countries (UNASUR, the Amazonian Cooperation Treaty Organization, etc.).
- MOH/BOG officials share epidemiological reports with border countries on a quarterly basis. Develop working relationships to discuss areas of common concern.
- MOH/BOG officials create an outbreak communication plan for unexpected reemergence of malaria in interior villages, which may be part of a general plan to address vector-borne disease outbreaks including dengue, malaria, and chikungunya.

Problem 5: Self-diagnosis and presumptive treatment practices in mining areas mean that number of actual malaria cases may be much greater than the number of confirmed cases that are reported to MOH/BOG. In addition, lack of internet connectivity in mining areas causes delays in health workers' communication of surveillance data. The timeliness and reliability of surveillance data reporting from the interior to the central level need to be improved.

Solution 5: The use of mobile health (mHealth) has experienced extensive growth and, when used for disease surveillance, can reduce healthcare costs and improve patient outcomes. As previously noted, mobile phone subscriptions in Guiana Shield countries are very high, which will allow health authorities to engage with phone users in two-way communication directly with the affected population via Short Message Service (SMS) or through smartphone applications programmed to send specialized information and messages related to malaria behaviors. Alternatively, mHealth could become a tool to extend the reach of MSDs for the purpose of malaria communication and education.

Actions:

- Carry out a needs assessment to design one or more mobile applications.
- Distribute mobile phones to community health workers to aid in disease surveillance and medicine quality control in the field.
- Develop a mobile application for data collection, IEC, or supervision and management. Consider support from AMI/RAVREDA partners PAHO/WHO, Links Media, and USP.[†]

[†] Pilot testing of a mobile app for medicine quality control is currently under development through the USAID-funded Promoting the Quality of Medicines program implemented by U.S. Pharmacopeial Convention (USP).

Funding

In addition to the normal operating budget, Suriname has obtained a \$2.8 million grant from The Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM). As proposed, strong, clear and simple communication component is expected to be carried out as part of the grant activities. This communication strategy is intended to support such a component. Generally, GFATM requires a 40% increase in the recipient country's investment in malaria control as a counterpart to new grant disbursements. In 2013, the Government of Suriname's annual budget for efforts against infectious diseases was USD \$1.5 million.¹

Branding

Materials distributed during the implementation of this strategy will be branded with the logo of the Suriname Ministry of Health and external donors as required.

II. Monitoring & Evaluation

Monitoring and evaluation (M&E) should be conducted under this plan to ensure that the communication tactics and overall program approach are advancing as planned and meeting key indicators. Currently, malaria cases are reported to the Bureau of Public Health (BOG) via radio on a weekly basis. Surveillance data that is routinely collected includes:

- Place of probable transmission (the need to obtain more detailed data on origin of cases has been noted; place names are often not the same as those on the map)
- Species of diagnosis
- Treatment results

Data Collection Methods and Instruments

New collection methods for monitoring data related to behavior change should include mobile data collection, KAP surveys, and focus groups. Monitoring of specific messages for comprehension and recall should be ongoing, in addition to monitoring of communication channels to ensure key audiences are reached. A summative evaluation of this strategy should be conducted at the close of communication strategy execution in 2016, which could be used to inform future communication strategies.

Proposed Indicators with Targets[‡]

Indicators could be selected based on survey questions that were used previously in order to measure progress against that baseline data about knowledge, attitudes, and behaviors among at-risk populations in mining areas. It is possible that stable populations could be included in the collection of data to measure the selected indicators. Mobile and migrant populations pose a

[‡] Targets are illustrative, and will need to be validated with MOH/BOG, PAHO/WHO, the Infectious Diseases Board, and other malaria stakeholders.

methodological challenge in that the composition of the population on which the results are to be measured may vary in comparison to the population with which the baseline was measured. Budget permitting, this issue may be addressed with pre- and post-tests of miners' knowledge of malaria, which would follow exposure to communication products. Notwithstanding the challenges, it is important to conduct repeated standardized surveys in order to obtain some measurable representation of the changes in the target populations' desired knowledge, attitudes, and behaviors over time.

Process indicators used to measure communication interventions' effectiveness at shifting knowledge and attitudes (recommended):

Inclusion criteria – any individual residing in or transiting through a mining area, irrespective of recent malaria infection:

- 80% of respondents recall hearing or seeing any malaria message within the last 6 months
- 70% of respondents know where to go for malaria testing and treatment
- 70% of respondents identify treatment completion as the key to curing malaria
- 80% of respondents can name at least one effective method to prevent malaria
- 30% of respondents who slept under a bed net in the night prior to the interview
- 70% of respondents know that they should not self-medicate for suspected malaria

Output indicators used to measure reach (recommended):

- 5,000 units of communication collateral deployed (i.e. IEC products)
- 5,000 mobile users subscribed to mHealth campaigns or applications (if applicable)

Outcome indicators (recommended):

Inclusion criteria – any individual that has experienced either suspected or confirmed malaria in the last 18 months:

- 70% of respondents were diagnosed by MSDs or at a health facility
- <20% of respondents self-diagnosed their malaria
- <10% of respondents have purchased ACT or another over-the-counter medicine to treat malaria
- 90% of respondents completed treatment
- 100% of respondents completed treatment after taking a malaria test
- 80% of respondents completed treatment after self-diagnosis
- 70% of respondents treated with free antimalarial medicines from a public health facility

12. Endnotes

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- ¹ World Health Organization. *World Malaria Report 2014*. URL: http://www.who.int/malaria/publications/world_malaria_report_2014/en/. (Accessed on March 10, 2015).
- ² Briolant, S et al. Epidemiology of malaria in Eau Claire: an illegal gold mining site in French Guyana. Presentation made during PAHO/WHO meeting in Paramaribo, Suriname from November 11-13, 2014.
- ³ Cleary, D. *Anatomy of the Amazon Gold Rush*. 1990. University Of Iowa Press: Iowa City, IA.
- ⁴ Heemskerk, M. 2013. "Study on knowledge, attitudes and practices of malaria and malaria treatment in the small scale gold mining sector in Suriname." Unpublished data.
- ⁵ Pan American Health Organization (PAHO). 2014. Plan for Artemisinin Resistance Containment and Elimination in South America. September (Unpublished Draft)
- ⁶ Heemskerk, M. 2011. "Small-scale gold mining in the transboundary areas of Brazil, Suriname, and French Guiana: social and environmental issues." United Nations Development Program, New York.
- ⁷ World Bank. Mobile cellular subscriptions (per 100 people). 2009-2012. Data published on World Bank website. URL: <http://data.worldbank.org/indicator/IT.CEL.SETS.P2>. Accessed on May 20, 2014.
- ⁸ Global Resource & Information Directory. 2014 URL: <http://www.fosigrid.org/south-america/south-american-edition>. Accessed on May 20, 2014.
- ⁹ Internet World Stats. URL: <http://internetworldstats.com/stats2.htm>. Accessed on May 20, 2014.
- ¹⁰ Bretas, G. November 2014. Personal communication.
- ¹¹ Olhar Digital. December 15, 2014. Em ranking de penetração da internet, Brasil fica fora do top-50. URL: <http://olhardigital.uol.com.br/noticia/em-ranking-de-penetracao-da-internet-brasil-fica-fora-do-top-50/45737>. Last accessed on March 19, 2015.
- ¹² Global Resource & Information Directory. 2014 URL: <http://www.fosigrid.org/south-america/south-american-edition>. Accessed on May 20, 2014.

13. Other References

- Bacon J, David. McCollum M, Andrea. Griffing, Sean. Salas, Carola. Soberon, Valeria. "Dynamics of Malaria Drug Resistance Patterns in the Amazon Basin Region Following Changes in Peruvian National Treatment Policy for Uncomplicated Malaria." 2009. *American Society for Microbiology*. 53 (5).
- Briolant, S et al. Epidemiology of malaria in Eau Claire: an illegal gold mining site in French Guyana. Presentation made during PAHO/WHO meeting in Paramaribo, Suriname from November 11-13, 2014.
- Carme, B. Demar, M. Hyperparasitaemia during bouts of malaria in French Guiana. *Malaria Journal* 2013, 12(20). URL: <http://www.malariajournal.com/content/12/1/20#B1>. Accessed on May 20, 2014.
- Cleary, D. *Anatomy of the Amazon Gold Rush*. 1990. University Of Iowa Press: Iowa City, IA.
- Coordination Meeting on Implementation of Recommendations in the Guyana Shield regarding Reduced Sensitivity to Artemisinin. Report on meeting held in Cayenne, French Guiana from October 22-23, 2013.
- De Theije, M. GOMIAM Secretariat: Research Project on Small Scale Gold Mining in the Amazon. Personal communication on February 11, 2014. Amsterdam, The Netherlands.
- Global Resource & Information Directory. 2014 URL: <http://www.fosigrid.org/south-america/south-american-edition>. Accessed on May 20, 2014.
- Heemskerk, M. 2009. "Demarcation of Indigenous and Maroon Lands in Suriname." *Amazon Conservation Team Suriname*.
- Heemskerk, M. 2013. "Maroon Gold Miners and Mining Risks in the Suriname Amazon." *Cultural Survival Quarterly*. 25(1).
- Heemskerk, M. 2005. "Rights to Land and Resources; Indigenous Peoples and Maroons in Suriname." *The Amazon Conservation Team*.
- Heemskerk, M. 2013. "Study on knowledge, attitudes and practices of malaria and malaria treatment in the small scale gold mining sector in Suriname." Unpublished data.
- Heemskerk, M. Delvoye, Katia. 2007. "A Sustainable Livelihoods Perspective on the Trio Indigenous Peoples of South Suriname." *The Amazon Conservation; Team Suriname*.
- Heemskerk, M. Duijves, C. 2012. "Looking for Gold, Finding Malaria; Assessment of changes in malaria-related knowledge, attitude and practices resulting from the Ministry of Health with malaria program in small-scale gold mining areas in Suriname." *Social Solutions*.
- Heemskerk, M. Duijves, C. 2012. "Migrant and Mobile Populations and Access to HIV Services in Gold Mining Areas in Suriname." *Social Solutions*.
- Heemskerk, M. Oliveira, M. "Maroon perceptions of Small-Scale Gold Mining Impacts, II." 2004. *World Wildlife fund – Guianas*.

-
- Heemskerk, M. Theije, M. 2009. "Moving frontiers in the Amazon: Brazilian Small-Scale Gold Miners in Suriname." *European Review of Latin American and Caribbean Studies*. 87, 5-25.
- Heemskerk, M. Viterloo, M. "Commercial Sex Work in Paramaribo, Suriname: A behavioral surveillance survey and sero-prevalence study among commercial sex workers in the streets, clubs, bars and salons of greater Paramaribo city." 2009. *National AIDS Program Suriname*.
- Hustache, S et al. April 2007. Malaria risk factors in Amerindian children in French Guiana. *Am J Trop Med Hyg*. 76(4): 619-625. URL: <http://www.ajtmh.org/content/76/4/619.long>. Accessed on May 20, 2014.
- Jitan, KJ. Vreden, S. Malti, A. 2012. "Emerging Coartem Resistance Assessed by Day Three Parasitaemia in Suriname." *American Society of Tropical Medicine and Hygiene*.
- Kolen, J. Crème, L. Theije, M. 2013. "Small-Scale Gold Mining in the Amazon: The Cases of Bolivia, Brazil, Colombia, Peru and Suriname." *Centre for Latin American Studies and Research*. (26).
- Malaria Policy Advisory Committee to the WHO. 2013. Conclusions and recommendations of March 2013 meeting. *Mal Journal*. 12:213 URL: <http://www.malariajournal.com/content/12/1/213>. Last accessed on August 29, 2014.
- Meek, S. 2013. Drug Resistance and Containment TEG. Malaria Policy Advisory Committee.
- Pribluda, VS et al. 2014. Were medicine quality and pharmaceutical management contributing factors in diminishing artemisinin efficacy in Guyana and Suriname? *Mal Journal*. 13:77. URL: <http://www.malariajournal.com/content/13/1/77>. Last accessed on September 2, 2014.
- Roll Back Malaria Partnership. February 2014. Malaria Behavior Change Communication Indicator Reference Guide. URL: <http://www.cominit.com/community-radio-africa/content/malaria-behavior-change-communication-indicator-reference-guide>. Accessed on May 15, 2014.
- Roll Back Malaria Partnership. November 2012. *Progress & Impact Series No. 9: Defeating Malaria in Asia, the Pacific, Americas, Middle East, and Europe*. With the World Health Organization and PATH.
- U.S. Agency for International Development. 2010. *The Amazon Malaria Initiative: Goals and Accomplishments, October 2001– May 2009*. Gaithersburg, MD: Links Media (ed.)
- Young, H. 2013. Preparing for the Inevitable: How Do We Tackle Drug Resistant Malaria? Global Development Professionals Network.

Annex: Summary of Findings from 2013 KAP Study in Suriname

A recent study sought to understand the knowledge, attitudes, and structural influences behind harmful malaria prevention and treatment practices in gold mining areas, as important foci of malaria transmission. As stated above, mining areas are among the locations at greatest risk for the circulation of substandard antimalarial medicines. Sale of illegal antimalarials, self-medication, incomplete treatment, and the use of monotherapy with suboptimal doses are frequent treatment problems in gold mining areas. Such practices lead to persistent transmission in these areas, result in risks to the lives of individuals, and are major determinants in the emergence and spread of antimalarial resistance (USAID 2010).

In 2013, PAHO and USAID-funded SIAPS conducted a KAP study in Suriname to collect baseline data on knowledge and behaviors concerning malaria treatment in gold mining areas and Paramaribo, and to find evidence to design appropriate interventions to improve access and adherence to malaria treatment. The study focused on key influences behind three behaviors: seeking of malaria diagnosis at a health facility, use of ACTs, and completion of treatment. The analysis looked at both direct and indirect influencing factors. Direct influences on seeking malaria diagnosis at a health facility included: distance from health post/geography, perception that individuals already know their status, knowledge of where to go, and financial reasons. Indirect influences on seeking malaria diagnosis at a health facility included legal immigration status and the belief that non-approved drugs work (i.e. Artecom).

The main study finding in Suriname was that there is a significant “funnel effect” when it comes to mining populations and their diagnosis, treatment, and follow-up of malaria illness. Of all survey respondents who reported malaria-related symptoms in the last 1.5 years, 53.3% were diagnosed at a health facility, 45.8% tested positive for malaria, 35% received free treatment, and only 29.4% completed treatment. ***In addition, the findings suggest that geographic influences are more powerful than individual beliefs in determining use of health facilities and proper treatment. In a context where public health facilities are far away and medicines are scarce, miners make the rational choice to procure their own antimalarial medicines prior to entering remote areas and becoming ill with malaria. In the likely event that they become infected, they will be prepared to self-treat.***

Direct Influences on Use of Antimalarial Medicines

Gender: Women represent a minority of the high-risk population, but are more likely than men to seek diagnosis at a health facility and use the correct treatment (PAHO/SIAPS 2013).

Geography: In looking at the influence that geographic factors have on relevant health behaviors, the data suggests that the financial cost as well as the opportunity cost in terms of time spent away from mining activities were the main barriers to use of health facilities. One reason cited for reliance on self-medication was due to individuals’ reluctance to leave gold mining areas.

Testing: Whether or not respondents took a diagnostic test for malaria was closely correlated with their completion of treatment: 78.9% of respondents who took the malaria test completed treatment, versus only 40.2% of those who self-diagnosed and self-treated.

Immigration: Legal immigration status is believed to influence use of health facilities. Health facilities in Brazil and Suriname are perceived to be more welcoming to migrant miners without immigration papers than those in French Guiana. Thus, individuals who become ill in French Guiana are likely to seek treatment across the border.

Additional Findings from KAP study in Suriname

Some other issues that emerged included the fact that 59.3% of people surveyed in Suriname were in French Guiana when they last experienced suspected malaria; 36.6% were in Suriname, and less than 5% were in Brazil and Guyana combined.

Survey respondents cited the following reasons for relying on self-diagnosis and self-medication:

- “I could no longer bare the pain and fever” [and hence he took the first medication he could lay his hands on].
- “I had no money to go test”
- “I already felt better when I went to go test because I already took Artecom”
- “It is not necessary to see a doctor to obtain medication”
- “The MSD had run out of medication”
- “There was police control [in French Guiana] and hence I could not leave”

The unregulated drug Artecom, an ACT, had been used by 83.5% of respondents, versus only 12.6% who used the regulated ACT Coartem. Supermarkets or pharmacies in mining areas were the top sources of antimalarials, followed by traveling vendors in the forest, supermarkets or pharmacies in Paramaribo, friends or colleagues, and lastly the businesses where individuals were employed. Individuals surveyed reported overwhelmingly positive experiences with Artecom, making it comparable to that of Coartem.

The top reasons cited by survey respondents for not completing treatment were that they:

- Felt better
- Experienced side effects
- Forgot to take the pills
- Thought that malaria would come back, so they saved pills
- Were unable to obtain all the medication they needed from the pharmacy
- Thought medication vendors just wanted to sell things
- Wanted to drink alcohol

Overall, there was a strong positive association between obtaining diagnosis from a public health facility and completing treatment with antimalarials. Thus, the assumption is that by increasing use of public health facilities, individuals’ adherence to medication will improve.

The main communication recommendations are:

- Use health communication to increase the share of miners that obtain diagnosis and treatment through official channels
- Make regulated medicines – currently only available in the public system following confirmed diagnosis – more readily available to miners
- Do not attempt to debunk the effectiveness of Artecom, as this runs contrary to popular experience; instead, make the logistics of obtaining regulated medicines more favorable (e.g. less difficult, lower cost to obtain)
- Launch a health education campaign to accompany improved access to medicines, which teaches the importance of completing treatment

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